

Department of the Navy SBIR/STTR Transition Program

DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.
NAVSEA #2023-0743

Topic # N201-043
AI Techniques and Recommendations for Exploitation of Undersea Warfare (USW) Synergies (ATREUS)
Daniel H. Wagner, Associates, Incorporated

WHO

SYSCOM: NAVSEA

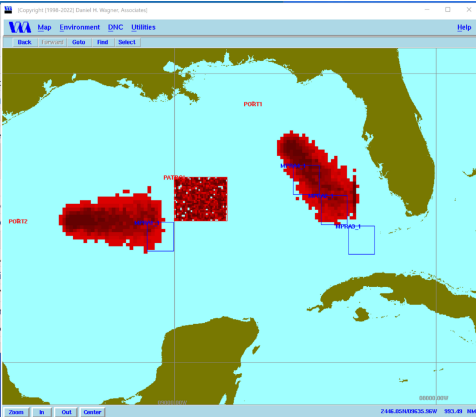
Sponsoring Program: PEO ISW 5E

Transition Target: Undersea Warfare Decision Support System (USW-DSS)

TPOC: (401) 832-6182

Other Transition Opportunities: Foreign Military Sales (FMS) version of USW-DSS, Aircraft Carrier-Tactical Support Center (CV-TSC) (IWS 5E), Maritime Tactical Command and Control (MTC2) (PMW-150), Distributed Common Ground Station – Navy (DCGS-N) (PMW-120), PEO Sub (PMS-485) / Commander Undersea Surveillance (CUS), Coast Guard Search and Rescue, Counter-Narcotics Search and Surveillance

Notes:



DHW: Optimized Maritime Patrol and Reconnaissance Aircraft (MPRA) searches for next eight hours against two transiting and one patrolling submarine.

WHAT

Operational Need and Improvement: Improved planning tools that automatically and efficiently exchange relevant information between TUSWOCs, MPRA TOCs, and MPRA, and effectively utilize this information to optimize collaborative / iterative planning and mission execution for both offensive and defensive USW missions.

Specifications Required: Improve exchange of critical planning, execution, monitoring, and assessment data between TUSWOC, TOC, and MPRA and optimize use of MPRA in TUSW.

Technology Developed: AI Techniques and Recommendations for Exploitation of Undersea Warfare (USW) Synergies (ATREUS) components that automatically and efficiently exchange relevant information between Theater USW Operations Center (TUSWOCs), Maritime Patrol and Reconnaissance Aircraft (MPRA), and MPRA Tactical Operations Centers (TOCs); and effectively utilize this information to support collaborative / iterative TUSW planning and mission execution, for both offensive and defensive USW missions.

Warfighter Value: (1) Improved USW mission effectiveness, (2) Reduced risk to friendly assets, (3) Reduced operator time-on-task.

WHEN

Contract Number: N68335-21-C-0778

Ending on: Sep 30, 2023

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Prototype ATREUS System	Low	Successful demonstration of prototype in USW-DSS DevSecOps cloud testbed	5	4th QTR FY23
ATREUS Technology Seminal Transition Event	Low	Successful demonstration of full scale system in USW-DSS DevSecOps cloud testbed	6	3rd QTR FY24
ATREUS Seminal Transition Event	Low	Successful transition into USW-DSS	7	4th QTR FY24

HOW

Projected Business Model: Since 1963 Daniel H. Wagner, Associates, has provided innovative and cost-effective technical solutions to complex problems in Naval Operations Analysis and commercial/ government applications, e.g.: custom resource optimization, decision support, multi-target tracking, and data fusion. Examples of successful transitions and deployments include:

- 1) Mission Optimization Configuration Item (MOCI) Web Service in Undersea Warfare Decision Support System (USW-DSS)
- 2) Acoustic Mission Planner (AMP) in MH-60R avionics system and shipboard Joint Mission Planning System (JMPS)
- 3) Computational components for evaluating and optimizing mine countermeasures (MCM) operations and estimating risk in MINenet Tactical module within Mine Warfare and Environmental Decision Aids Library (MEDAL)
- 4) Net-Centric Data Fusion (NCDF) for USW-DSS
- 5) Data Fusion Engine (DFEN) in USW-DSS

ATREUS is targeted for direct integration into USW-DSS, although additional transition opportunities include other naval systems that could benefit from ATREUS technology and software components, and other defense applications with requirements to jointly optimize search, such as Marine Corps, Army, and Air Force mission planning,

Company Objectives: To use our operational experience and technical skills to address challenging problems in defense analyses and provide solutions and computational components that enable warfighters to reduce their vulnerability and conduct successful and operationally effective military operations.

Potential Commercial Applications: ATREUS algorithms and methodology have potential applications to non-defense environments with requirements to jointly optimize search, such as border surveillance and port/facility security.

Contact: Dr. W. Reynolds Monach, President
reynolds@va.wagner.com (757) 727-7700